

Wherever the Slavs migrated they introduced the custom of incineration, and carried with them the characteristic metal head-rings, the ends of which terminated in sigmoid curves (Hackenringe). The settlement of the Venede on the Baltic dates back to the fourth century, B.C. The Baltic Slavs were profoundly affected by the expansion of the Germans about the beginning of our era, but apparently not till the eighth century A.D., did the Slavs colonise Northern Russia.

MR. R. SHELFORD, of the Sarawak Museum, has sent us a copy of his paper in the October number of the *Ibis*, describing the arrangement of the down and plumage in the embryos and young of *Centropus sinensis*—an aberrant cuckoo. Certain differences from the arrangement obtaining in the allied *C. celebensis* are noticed.

THE sixth fasciculus of vol. v. of the Memoirs of the Boston (U.S.) Society of Natural History is devoted to an elaborate memoir by Mr. R. P. Bigelow on the anatomy and development of the medusa known as *Cassiopea xamachana*. In common with the allied *Polyclonia frondosa*, this is a form specially modified for a sedentary existence in shallow water among mangrove roots.

WE have received the Report of the Museums Association for 1900, containing the account of the meeting held at Canterbury in July last under the presidency of Dr. Henry Woodward. It is satisfactory to learn that this useful association is in such a flourishing condition that it has to consider how best to spend its surplus income. The Report includes the President's address, together with twelve papers and various notes. Mr. F. A. Bather gives specimens of descriptive museum labels for certain groups of echinoderms, but the extreme technicality of these suggests that they are suited for a zoological text-book rather than for the ordinary public. A heading like "CRYPTOBLASTUS, E. AND C," is calculated to mystify rather than enlighten the uninitiated. In his address, the President dwells on the difficulty of amalgamating the recent and fossil zoological collections in the British Museum owing to the constitution of the Staff.

THE abstract of a paper by Dr. W. H. Gaskell on the origin of the eyes of vertebrates and the meaning of the second pair of cranial nerves appears in the November issue of the *Proceedings* of the Anatomical Society. After stating that the ancestor of the vertebrates possessed a pair of diverticula from the fore part of the alimentary canal with which the ganglia of the retina and the optic stalks of the lateral eyes were connected, the author pointed out that such a pair of blind diverticula exist in generalised crustaceans, such as *Branchipus* and *Apus*, adding that there is a connection between these diverticula and the retinal ganglion. It is therefore assumed that similar structures existed in the extinct trilobites. From this and other evidence it is inferred that the origin of the vertebrate eye is traceable to an animal derived from the trilobite stock, such as was abundant when the fish-like cephalaspids made their appearance.

THE horary values of the magnetic elements (declination and horizontal force) at Copenhagen, in the years 1895–1896, are given by M. Adam Paulsen in the *Annales de l'Observatoire magnétique de Copenhague*, just received from the Denmark Meteorological Institute, of which M. Paulsen is director.

THE Sanitary and Economic Association, Ltd., Gloucester, have sent us a pamphlet published by them for the purpose of promoting the economy of coal, the abatement of smoke, and

the diffusion of an elementary knowledge of the first principles of warming and ventilating generally.

PROF. S. P. THOMPSON'S interesting story of "Michael Faraday: His Life and Work," published in the Century Science Series, is now available in the popular edition at the low price of half-a-crown. The book was reviewed in *NATURE* of June 8, 1899 (vol. lx. p. 123). Messrs. Cassell and Co. are the publishers.

MESSRS. SAMPSON LOW, MARSTON AND CO. have published the sixth edition of Mr. N. E. Yorke-Davies' little book on "Health and Condition in the Active and the Sedentary." The book contains a clear statement of the laws of health, with special reference to the dietetic treatment of ailments due to errors in eating and drinking.

ONE of the most remarkable catalytic agents recently discovered is metallic nickel, reduced from its oxide at a low temperature. Two or three years ago MM. Sabatier and Senderens showed that this metal is capable of causing the direct combination of hydrogen with ethylene and acetylene, ethane being formed in both cases. In the current number of the *Comptes rendus* they now show that reduced nickel is a very active catalytic agent, so far as the addition of hydrogen is concerned surpassing even spongy platinum. Thus a mixture of hydrogen and benzene vapour, passed over reduced nickel at about 200° C., readily gives hexahydrobenzene, no benzene escaping conversion if the hydrogen is in excess. The reaction appears to be a general one, since the homologues of benzene behave similarly; nitrobenzene is reduced to aniline.

THE phenomenon of birotation of the sugars has given rise to a considerable amount of work without any very definite results being obtained. In the current number of the *Zeitschrift für physikalische Chemie* there is a paper, by Dr. Yukichi Osaka, on the birotation of *d*-glucose, which throws much light upon this subject, and forms an interesting application of the dissociation theory of solution. From the velocity constants of the change of rotation of *d*-glucose, both alone and in presence of acids, bases and neutral salts, it is shown that this sugar acts as a weak acid, the velocity of the change of rotation being proportional to the concentration of the hydroxyl ions, and to the square root of the concentration of the hydrogen ions.

THE additions to the Zoological Society's Gardens during the past week include a Sykes's Monkey (*Cercopithecus albigularis*) from East Africa, presented by Mr. J. Coombes; two Black-necked Swans (*Cygnus nigricollis*) from Antarctic America, a Yellow-rumped Parrakeet (*Platycercus flaveolus*) from Australia, three Blue-fronted Amazons (*Chrysotis aestiva*) from South America, deposited.

OUR ASTRONOMICAL COLUMN.

VARIATIONS IN THE MOTION OF THE TERRESTRIAL POLE.—In the *Astronomical Journal* (vol. xxi. No. 489), Prof. S. C. Chandler investigates the data available for determining the changes in the annual elliptical component of the polar motion. References to these changes have been previously made in *A. J.* Nos. 422 and 446, but no decisive conclusions could then be made. The data are taken from the records at Pulkowa, Leyden, Washington, Berlin, Cambridge and Madison, and are grouped for two epochs, 1865, 1883. From each series the effect of the 427-day term of the latitude variation is eliminated after correction to a uniform value of the aberration constant and stellar parallax; from the residuals the constants of the annual term of the latitude variation are found, and finally, by combining these constants for all the series at each epoch, the elements of the ellipse are computed for 1865 and 1883.

The present article considers all records prior to 1890, and the result indicates that the line of apsides is revolving from east to west, or in a direction contrary to that of the pole in its orbit, in a long period of some 75 years—i.e. at a rate of about 5° annually; also that the length of the annual period oscillates about its mean value, the fluctuations having a long periodical character, with a cycle of about 60 years.

DEFINITIVE ELEMENTS OF THE ORBIT OF COMET 1898 VII.—Nos. 3684, 3685 of the *Astronomische Nachrichten* are devoted to an exhaustive discussion, by Mr. C. J. Merfield, of Sydney, of the data recorded for the comet discovered by Mr. Coddington at the Lick Observatory on June 11, 1898. Some 400 observations are utilised, the largest series being those made by Mr. Tebbutt at Windsor, New South Wales.

Epoch of Osculation 1898 June 21.

$T = 1898 \text{ Sept. } 14^{\text{h}} 04^{\text{m}} 20^{\text{s}} 56 \text{ G.M.T.}$

$$\begin{array}{rcl} \omega & = & 233^{\circ} 15' 18''.66 \\ \Omega & = & 74^{\circ} 0' 58''.17 \\ i & = & 69^{\circ} 56' 0''.37 \end{array} \left. \vphantom{\begin{array}{l} \omega \\ \Omega \\ i \end{array}} \right\} 1900^{\circ} 0$$

$$\begin{array}{l} \log q = 0.2308587. \\ \log e = 0.0004487. \\ e = 1.0010336. \end{array}$$

OBSERVATIONS OF EROS.—Several observers are now commencing to publish their lists of measures of the planet Eros, made during the recent opposition. In the *Astronomische Nachrichten* (Bd. 154, No. 3683), Prof. A. Abetti gives a long list of measures taken during July, August, September, October and December 1900 at Arcetri-Firenze.

M. J. Pidoux also contributes a series obtained during October and November 1900 at Geneva, and Signor A. Antoniazzi others during July and August 1900 at Padova.

PHOTOGRAPHIC CATALOGUE OF POLAR STARS.—The first issue of the *Publications of the Vassar College Observatory*, U.S.A., contains a catalogue of sixty-five stars within one degree of the North Pole, reduced by Miss C. E. Furness from photographs obtained with the 13-inch Helsingfors astrographic refractor. A discussion of the results in a manner suggested by Prof. Jacoby, of Columbia University, led the conclusion that, within the limits of the plates—2" square—no optical distortion was to be detected.

AUDIBILITY OF THE SOUND OF FIRING ON FEBRUARY 1.

ON Friday last, between three and four in the afternoon, the body of our lamented Queen was conveyed from Cowes to Portsmouth past a fleet consisting of some of the finest battle-ships of the world. The minute-guns fired from these vessels during the passage of the funeral procession were clearly heard at great distances from Spithead; for, from the regularity of the discharges, there can be little doubt as to the origin of the reports.

We have received several letters referring to the sounds heard at various places. Prof. E. B. Poulton, F.R.S., writes as follows from Youlbury, Boar's Hill, near Oxford:—

"During the interval between three and four o'clock on the afternoon of Friday, February 1, many people on this hill, about 520 feet above sea-level, including Mr. Arthur J. Evans and I, heard the sound of distant guns. The period over which the sounds were heard, the direction from which they appeared to come, the mode of their occurrence in groups separated by intervals of silence, led us to believe that they were the guns of the fleet ranged between Cowes and Portsmouth, and that each group of sounds represented the salute of a single ship as it was passed by the Royal Yacht. Judging from an old atlas the distance appears to be about sixty-seven miles in a straight line. The afternoon was bright and sunny and the air very still. The sounds could be distinctly heard in the house with closed windows. Out of doors they were really impressive. It is probable that other records will reach you, indicating that they were noticed at much greater distances."

Prof. F. J. Allen and Mr. C. Thwaites heard the reports very distinctly at Sutton, Surrey, which is about sixty miles from Portsmouth, and the latter states that the windows of a house were slightly shaken with each discharge.

NO. 1632, VOL. 63]

Several letters from correspondents who heard the sounds have appeared in the *Times*, the *Standard* and the *Daily News*. Towards the east, the booming of the guns was distinctly heard at Beachy Head (60 miles from Spithead), near Brightling (69 miles) and Woodchurch (84 miles); towards the east-north-east, near Tunbridge Wells (66 miles); towards the north-east, at Wallington (59 miles), Croydon and Richmond Hill (62 miles), and Bexley (75 miles); towards the north-north-east, near King's Langley (74 miles); and towards the north, at Marcham (near Abingdon, 64 miles), Great Missenden (69 miles), Oxford (70 miles), Witney (73 miles), and Leighton Buzzard (84 miles). The concussion was sometimes strong enough to shake windows at Wallington, Richmond Hill and Great Missenden. Near Brightling, cock-pheasants crowed as they do during a thunder-storm. As a rule, there appears to have been little or no wind to interfere with the propagation of the sound-waves.

JUPITER AND HIS MARKINGS.

JUPITER is now visible as a morning star, and observers have resumed their investigations of his surface markings. The coming opposition on June 30 will not be a favourable one for telescopicists in Europe, as the planet will be in about 23 degrees of south declination, and therefore at a very low altitude.

The lingering relics of the great red spot, situated within the hollow in the south side of the southern equatorial belt, will probably be a difficult feature in the circumstances. But it should be carefully looked for, and its times of transit across the central meridian of the planet noted as frequently as possible. These will occur during February, about 80 minutes after the times given for the zero meridian (System II.) by Mr. Crommelin in his ephemerides published in the *Monthly Notices* for December 1900. Whenever the red spot itself cannot be distinguished, it will be advisable to take the time of transit of the hollow in the belt, which is a very easy object. In recent years the rotation of the spot and hollow has exhibited a slow decrease of speed, amounting to about one-tenth of a second annually. In 1896 the period was 9h. 55m. 41.3s., in 1900 9h. 55m. 41.8s. On February 15, 1901, the longitude of the spot will be about 48°, if the retardation has continued. Its easterly drift will bring it into longitude 51° 5' on June 15, 1901, and 61° 5' on June 15, 1902.

With regard to the equatorial spots, these have shown a mean motion of about 9h. 50m. 24.1s. during the past three years, and this is about six seconds shorter than the period adopted for System I. in the ephemerides above referred to.

The study of Jupiter during the present year may have a special significance, for it is likely to throw an important light upon the question whether or not certain features on the disc are recurrent at pretty regular intervals. There is a belt in about 23° north latitude which displayed some remarkable outbreaks of spots in 1869, 1880 and 1890, and a similar phenomenon is now again due if such outbreaks are periodical and owe their origin to some disturbing action repeated on the planet at intervals of about a decade. The features alluded to move more rapidly than any other markings observed on the disc. The same, north temperate, belt is often marked with small dark spots or condensations, but these travel with normal velocity and differ little from the rate of the red spot. There is another current in this region conforming with a period of 9h. 56m., which is probably slower than any other Iovian current. In the southern hemisphere, south of the red spot, there are two well-pronounced streams translating their various markings along at rates of 9h. 55m. 19s. and 9h. 55m. 7s. for a complete circuit.

Among other details offered by the planet may be mentioned the colours of the belts and their relative intensity and distribution over the disc. The value of continuous observation of the forms and motions of the markings in various latitudes is very great. It is only by collecting a mass of results during many consecutive years that proper investigation can be made and the various changes in progress assigned their proper periods. Until quite recently observations were somewhat irregular and altogether insufficient for a complete discussion of the phenomena. During the coming opposition observers in the southern hemisphere will have the planet well placed, and ought to be able to supply any deficiencies in the results obtained at northern observatories.

W. F. DENNING.